

Remarks

Claims 1, 2, 6 and 10 are amended and claims 13 to 33 are added. Claims 1 to 33 are pending in this application of which claims 1, 10, 13, 21, 26 and 31 to 33 are in independent form.

Claims 4, 8 and 9 contain allowable subject matter. Claim 13 is added and incorporates all the features and limitations of claim 4 and claim 1 from which it had depended. Claims 14 to 20 are added as claims dependent from claim 13 and incorporate the subject matter of claims 2, 3, 5, 6, 7, 8 and 9, respectively.

Claim 21 is added and incorporates the subject matter of claim 8 as well as claims 1, 6 and 7 from which claim 8 had depended. Claims 22 to 25 are added as claims dependent from claim 21 and incorporate the subject matter of original claims 2, 3, 4 and 5, respectively. Also, claim 26 is added and includes the subject matter of allowable claim 9 and claims 1, 6 and 7 from which claim 9 had depended. Claims 27 to 30 are added as claims dependent from claim 26 and correspond to original claims 2, 3, 4 and 5, respectively.

In view of the above, claims 13 to 30 should now be in condition for allowance.

Claim 31 is added to cover the microlithographic projection exposure system and includes the features of the allowable combination of claims 1 and 4. Likewise, claim 32 covers the microlithographic projection exposure system and includes the

subject matter of allowable claim 8 in combination with claims 1, 6 and 7. Claim 33 is directed to an embodiment of the microlithographic projection exposure system of claim 10 supplemented with the features and limitations of allowable claim 9 and claims 1, 6 and 7 from which it had depended.

In view of the above, claims 31 to 33 should now too be in condition for allowance.

Claims 1 and 10 were rejected under 35 USC 112, second paragraph, as being indefinite because the phrase:

"said lens being made of a  
single-axis, double refracting material  
defining an optical crystal axis;"

was vague and indefinite. Claims 1 and 10 are amended herein to correspond to the first interpretation of the Examiner by inserting the word -- crystalline -- ahead of "material".

Claim 10 was rejected as being indefinite because of the clause:

"...the light of said light beam being  
polarized either tangentially to said  
optical axis or radially with respect to  
said optical axis;"

In this connection, it was pointed out in the action that the specification discloses the resonator 11 as providing the claimed polarization.

Applicants note that even if the resonator provides the claimed polarization, the light will be polarized within the illumination system or within the projection objective. Claim 10 does not recite that the light beam gets polarized within the optical arrangement but that the light beam is polarized within the optical arrangement and that the optical arrangement is

included either in the illumination system or in the projection objective. Furthermore, it is generally possible that the illumination system or the projection objective influences the polarization of the light beam. To clarify this situation, the applicants have amended claim 10 to recite that:

"the light of said light beam in said plane being in a polarized state either tangentially to said optical axis or radially with respect to said optical axis;" (emphasis added)

With respect to the last objection suggesting indefiniteness with respect to the illumination system, applicants emphasize that there is no reason why an illumination system should necessarily contain a light source. An illumination system illuminates irrespective of the fact that there is a separate light source and the light of this light source is processed by the illumination system or if the light source is integrated in the illumination system so that the illumination system is generating and processing the light. As noted in the applicants' disclosure, starting at page 6, line 10:

"...with this illumination system, the reticle 3 is illuminated."

As can be seen from FIG. 1, the light of the laser passes through the illumination system. To more clearly define the illumination system vis-a-vis the light source, claim 10 is amended to include the feature and limitation of:

"an illumination system arranged on said optical axis downstream of said UV light source for receiving and processing the light beam of said UV light source;"

The above should now more clearly define the illumination

system with respect to the light source.

For the reasons advanced above, claims 1 and 10 should now be definite as required by the statute.

On page 4 of the action, claim 6 was objected to because of the informality noted. Claim 6 is amended herein as suggested by the Examiner to correct the informality.

Claims 1 and 10 were rejected under 35 USC 102(b) as being anticipated by Schuster (498). The following will show that these claims patentably distinguish the applicants' invention over this reference.

Schuster (498) discloses an optical system with at least one lens being made of crystal having a dispersion of double refraction. In this connection, please refer to claim 1 and column 1, lines 49 to 59, of this reference. Schuster (498) makes use of the anomalous dispersion of birefringence according to which the refraction differences vanish at a certain wavelength. The optical system of Schuster (498) includes a light source which generates light at this certain wavelength (isotropic wavelength). Thus, the double refraction is eliminated for the lens made of a crystal by the selection of the light wavelength.

In this context, it is disclosed that  $\text{MgF}_2$  may be irradiated at 119.49 nm with light of a tangential polarization. There is no suggestion in this reference which could enable our person of ordinary skill in the art to use tangential polarization at a wavelength other than the isotropic wavelength, that is, in a situation wherein the double refraction of the lens material is not eliminated by the election of the light wavelength.

Claims 1 and 10 are both amended herein to recite that the wavelength of the light is 157 nm or 193 nm which is not the isotropic wavelength according to Schuster (498). For such wavelengths, the person of ordinary skill in the art will not take into account the disclosure of Schuster (498) as this reference deals only with the situation at isotropic wavelength. Moreover, our artisan would not take into account the disclosure of Schuster (498) concerning tangential polarization as this disclosure is based on the assumption that  $\text{MgF}_2$  is irradiated with light having a wavelength of 119.49 nm, that is, the isotropic wavelength for  $\text{MgF}_2$ .

In the action, claims 1 and 10 were rejected under 35 USC 103(a) as being unpatentable over Gerhard in view of Schuster (498). Also, claims 1 and 10 were rejected under 35 USC 103(a) as being unpatentable over Totzeck et al in view Schuster (498). Applicants respectfully submit that the person of ordinary skill would not consider combining Schuster (498) with any of the teachings set forth in Gerhard or Totzeck et al which do not deal with the situation at the isotropic wavelength.

In view of the above, applicants submit that claims 1 and 10 should now be allowable as should claims 2 to 9 which are dependent from claim 1 and claims 11 and 12 which are dependent from claim 10.

Reconsideration of the application is earnestly solicited.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Walter Ottesen', written in a cursive style.

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